

Work Order ID 71856-1

Wednesday, July 13, 2011 11:00:32 AM

Item ID: D2741

Revision ID:

Item Name: Blade, 350 Skidtube

Start Date: 7/14/2011 Start Qty: 40.00

Required Date: 7/28/2011 Req'd Qty: 40.00

Reference:

Approvals: Process Plan: MF

QC:

Date: 11-07-13

Date:

Tooling:

SPC (Y/N):

Cust Item ID:

Customer:

Setup Start

Stop

Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D2741

Rev C

100



Bandsaw

Jeaspa Bandsaw

BAND SAW

Memo

Cut blanks 13.850" long +0.063" -0.009"

0.00

0.00

0.00

0.00

0.00

0.00

110



HAAS 1

HAAS CNC vertical machine #1

HAAS CNC VERTICAL MACHINING #1

Memo

1-Machine per folio FA108

120



QC

Quality Control

QC2- Inspect parts off machine FA1/FA1B

Memo

BA 11/07/13

BA 11/09/12

BA 11/04/13

40 0

40 0

40 0

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Required Date: 7/28/2011 Req'd Qty: 40.00

Reference:

Approvals:

Process Plan:

QC:

Sequence ID/
Work Center ID

130



QC

Quality Control

Small Fab

140



Small Fab

Small Fab

Memo

1-Deburr 2-Bend per DWG D2741

0.00

Small 19

0.00

(40)

Memo

QC 8- Inspect parts - second check

0.00

11-09-15

Set Up/
Run Hours

Tooling:

SPC (Y/N):

Date:

Date:

Cust Item ID:
Customer:



Start Stop
Setup Start Stop



Accept



Insp.
Reject Number Stamp

Plan Code

Accept Qty

Reject Qty

Reject Number

Insp. Stamp

Memo

QC 5- Inspect part completeness to step on W/O

0.00

Small 19

0.00

(40)

Quality Control

QC



150

W/O:		WORK ORDER CHANGES					
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Reference:

Approvals: Process Plan:

QC:

Date:

Date:

Tooling:

SPC (Y/N):

Date:

Date:

Setup Start

Stop

Run Start

Stop

Sequence ID/
Work Center ID

160



Outsource I

Outsource process - Heat Treat

Operation
Description

Outsource process - Heat Treat

Set Up/
Run Hours

0.00

0.00

Memo

Issue P/O: 14953 Harden material as per Dwg D2741 Min. Ultimate
Tensile Strength = 152 ksi (34-40 HRC) Min. Yield Tensile Strength = 141
ksi Test report or Certification required

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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170



Packaging

Packaging

Receive & Inspect for Damage & Mat'l Certs

0.00

Memo

Ensure Test report or Certification attached

0.00

180



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

8/11/07

ccrnts
+40

11-09-20
(40)

8/11/06 (40)

W/O:		WORK ORDER CHANGES					
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Wednesday, July 13, 2011 11:00:32 AM

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Accept

Setup Start

Stop

Revision ID:

Item Name: Blade, 350 Skidtube

Start Date: 7/14/2011 Start Qty: 40.00

Required Date: 7/28/2011 Req'd Qty: 40.00

Cust Item ID:

Customer:

Reference:

Run Start

Stop

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

190



Small Fab

Small Fab

Small Fab

Memo

1-Pass in deburring machine 2-Grind off edges

0.00

0.00

11-11-22



195



HandFinish

Hand Finishing

Memo

clean with wash & wipe to remove oil

0.00

0.00

8T 11-11-25 (x10)

200



Powdercoat

Powder Coating

White Gloss(Ref:4.3.5.2) per QSI005 4.3-Steel

Memo

START TIME:

1:56

FINISH TIME:

1:24

OVEN TEMPERATURE:

370

0.00

8T 11-11-25 (x10)

W/O:		WORK ORDER CHANGES					
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Wednesday, July 13, 2011 11:00:32 AM



Page 5

Item ID: D2741

Accept



Setup Start



Revision ID:

Stop



Item Name: Blade, 350 Skidtube

Start Date: 7/14/2011 Start Qty: 40.00



Cust Item ID:

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Customer:

Reference:

Run Start



Approvals: Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan Code Accept Qty Reject Qty Reject Number Insp. Stamp

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

11/11/25 SP 10

220

Identify as per dwg & Stock Location: 466

0.00



Packaging

Memo

0.00

Packaging

11/11/25 100 SP

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

11/11/28 SP
11-11-25

W/O:		WORK ORDER CHANGES					
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

Wednesday, July 13, 2011 11:00:30 AM

Page 1

Work Order ID: 71856



Parent Item: D2741

Parent Item Name: Blade, 350 Skidtube

Start Date: 7/14/2011

Required Date: 7/28/2011

Start Qty: 40.00

Required Qty: 40.00

Comments: IPP Rev: D 00.11.15 Removed P/O turning - in house process EC
 IPP Rev: F 06-03-20 As Per Rev C JLM
 IPP Rev: F 06.04.20 Added grinding after heat treating EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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M4130NB0.500X03.000

Purchased

No

100

f

47.2500

1.1541

48.59368



4130 Bar 0.500 x 3.00

Location

Loc Qty

Loc Code

MAT034

47.25

117835

47.25

M118016 x 48.594 * 202 11/09/02

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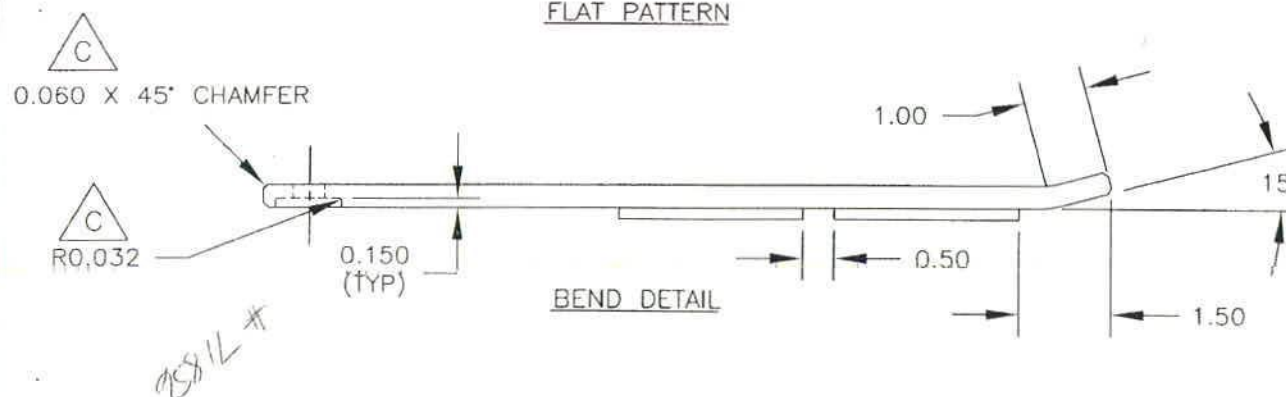
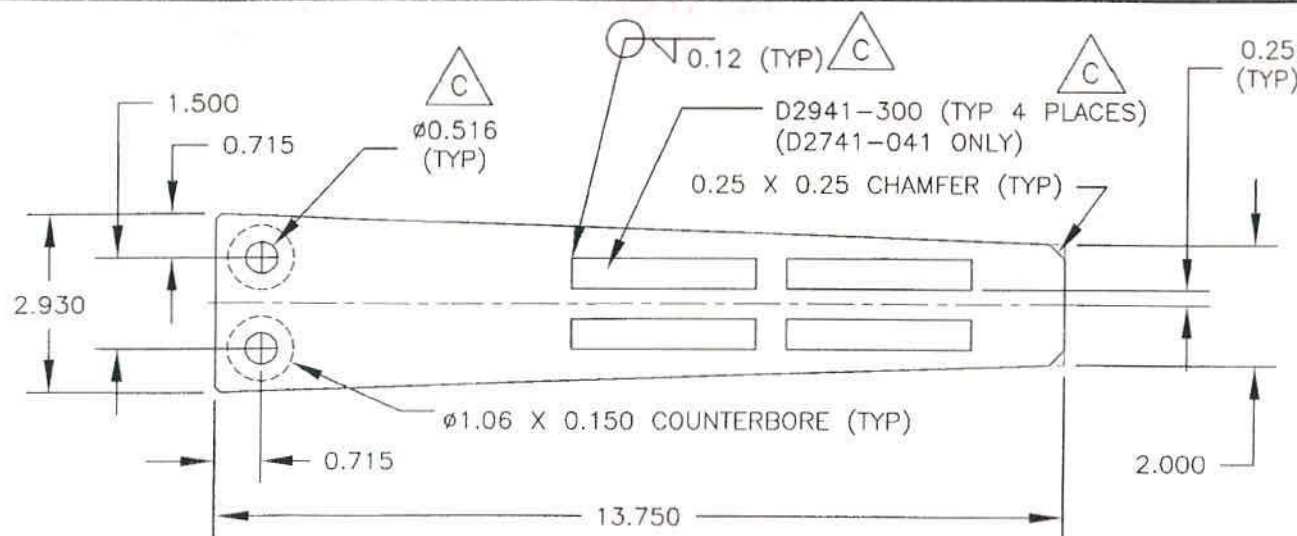
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DART

RELEASED
06-02-07



D2741 BLADE

- 1) MATERIAL: AISI 4130 STEEL 0.375 THICK
MIN. ULTIMATE TENSILE STRENGTH = 152 ksi (34-40 HRC)
MIN. YIELD TENSILE STRENGTH = 141 ksi
- 2) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) BREAK ALL SHARP EDGES 0.030 TO 0.060
- 6) TO MAKE D2741-041, WELD D2941-300 (4) AS SHOWN ABOVE.
REMOVE POWDER COAT FROM SURFACE OF D2941-300
- 7) TO MAKE D2741-043, WELD 7560 HARDCOAT ROD INSTEAD OF D2941-300

DESIGN	DRAWN BY	DART AEROSPACE USA, INC.
974	974	PORT HADLOCK, WA
CHECKED	APPROVED	DRAWING NO.
974	974	D2741
DATE	TITLE	REV. C
06.01.12	BLADE	SHEET 1 OF 1
A	98.04.16	NEW ISSUE
B	98.09.01	CHANGE C'SINK TO C'BORE
C	06.01.12	LARGER HOLE, ADD RADIUS AND CHAMFER ADD -041/-043 OPTIONS

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO14953

Purchase Order Date 9/20/2011

PO Print Date 9/20/2011

Page Number 1 of 1

Order From :

VC-MET004

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

Contact Name

Buyer

Brigitte Golden

Vendor Phone

450 473 1884

Requisition Nbr

Vendor Fax

450 491 5498

Tax Resale Nbr

10127-2607

Vendor Account Nbr

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
71856		D2741 Blade	9/26/2011 Yes	40.00	FedEx PI collect	\$10.3300	\$413.20

Special Inst:

Harden Material as per DWG: D2741
Ultimate Tensile Strength= 152ksi (34-40
HRC) Yield Tensile Strength=141 ksi.
Test report or Certification required

PO Total:

\$413.20

B 71856

Change Nbr:

1

Change Date: 9/20/2011

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required when applicable

W/O:		WORK ORDER CHANGES					
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METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
169674	1

CLIENT / customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'i heat code	NUMÉRO DE LOT lot number						
14953		4130								
SPÉCIFICATIONS DU PROCÉDÉ processing specifications										
SEL HARDEN HARDEN AND TEMPER SAE AMS 2759/1 REV.E										
EXIGENCE / requirement	SPÉCIFICATIONS / specified		TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results						
HARDNESS	34 - 40 HRC		40	38 - 40 HRC						
TENSILE (KSI)	152 - 182 KSI			171 - 182 KSI						
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description								
40	140	D2741 BLADE REF. 71856 1 PALETTE = 2 BC								
Operation	Temp. spécifiée Specified Temp	Temps de trempage Spécifié Specified Soak Temp	Atmosphère	Carbone Carbon Potential	Q-Media Q-Temp	Four # Furnace #	Date Départ Start Date	Heure d'entrée Time In	Heure de sortie Time Out	Date Complétée Date complete
1,00 CONT. INIT.	LAVAGE		si nécessaire							
2,00 PREPARINC	COMPTAGE									
3,00 PREHEAT 1	1000	1:00 1:30	air			133				
4,00 SEL HARDE	1575	0:40	SEL		BRINE	106				
5,00 WASH	150	0:30	soap							
6,00 SNAP TEMP	400	2:00	air			609				
7,00 SANDBLAS			Sablage							

W/O:		WORK ORDER CHANGES					
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ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certificat de Conformité Détail
Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
169674	1

CLIENT / customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

Operation	Temp. spécifiée Specified Temp	Temps de trempage Spécifié Specified Soak Temp	Atmosphère	Carbone Carbon Potential	Q-Media Q-Temp	Four # Furnace #	Date Départ Start Date	Heure d'entrée Time In	Heure de sortie Time Out	Date Complétée Date complete
8,00 DIST INSP										
9,00 TEMPER	875 +/-10°F	4 hrs	air			635				
10,00 HARDN INS										
11,00 SANDBLAS			Sablage							
12,00 HUILAGE			huile							
13,00 FINAL INSP							10-05-2011			10-05-2011

COMMENTAIRES / comments

ALL THE HEAT TREATMENT PROCESSING PERFORMED ON THIS ORDER WAS ACCOMPLISHED USING HEAT TREATMENT EQUIPEMENT THAT MEETS THE REQUIREMENTS OF AMS 2750. ALL THE HEAT TREATMENT OPERATIONS WERE ACCOMPLISHED IN ACCORDANCE WITH THE REQUESTED/REQUIRED HEAT TREATMENT SPECIFICATION AND ALL REQUIRED VERIFICATIONS TEST HAVE BEEN PERFORMED AND DOCUMENTED. NO UNAUTHORIZED CHANGES OR DEVIATIONS TO REQUIRED HEAT TREATMENT SPECIFICATIONS OR PROCEDURES HAVE BEEN PERFORMED.

APPROUVÉ par / Approved by: *Vincent Gauthier*

DATE: 2011-10-05

/ Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client./We certify that all the information on this report is exact and in accordance with the order requirements.

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NOTE: Date & initial all entries



Metcor Inc.
560, boul. Arthur-Sauvé
St-Eustache (Québec) J7R 5A8
Tél. : 450-473-1854

Télécopieur/Fax administration : 450-491-4
Télécopieur/Fax production : 450-491-4

BOULEVARD CHARGÉ
18887

18887
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SPECIFICATIONS DU PRODUIT

18887
18887
18887

18887	18887	18887	18887	18887
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Signature

18887	18887	18887	18887
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SIGNATURES

18887	18887	18887
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DATE: 2001-12-13

W/O:		WORK ORDER CHANGES					
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